NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

Restoration and Management of Declining Habitats

(acre)

Code 643

DEFINITION

Restoring and conserving rare or declining native vegetated communities and associated wildlife species.

PURPOSES

- Restore habitat degraded by human activity.
- Provide habitat for rare and declining wildlife species by restoring and conserving native plant communities.
- Increase native plant community diversity.
- Management of unique or declining native habitats

CONDITIONS WHERE PRACTICE APPLIES

On landscapes, which once supported or currently support prairie, savanna, or sedge meadow communities, which can be restored or managed.

For prairies and savannas this standard applies if one of the following conditions exist:

- The soil is a Mollisol, **or**
- The site is a remnant prairie or savanna, **or**
- The site can be documented as prairie or savanna from historical records. (Note that historical records can be obtained from the Indiana State Archives, Indianapolis, Indiana.)

This standard also applies to areas dominated by hydric soils (greater than 50%) where sedge meadows will be enhanced or restored. Sedge meadows are plant communities that are dominated by sedge species (*Carex spp*.).

GENERAL CRITERIA

Plans and application of habitat restoration shall comply with all applicable federal, state, and local laws and regulations.

Management practices and activities shall not disturb cover during the primary nesting period in Indiana (March 1 – July 15), except chemical methods, prescribed burning or mowing may be utilized during the establishment period, or when necessary to maintain the health and/or vigor of the plant community.

Vegetative manipulations to restore plant and/or animal diversity shall be accomplished by prescribed burning or by mechanical, biological or chemical methods, or a combination of the above.

Seeding and planting rates will be adequate to accomplish the planned purpose. Only ecologically adapted native seed and plant material will be used. No improved varieties of grass or forbs will be used in establishing this practice. Planting dates, care in handling, site preparation and planting of the plant materials will insure an acceptable survival rate.

Plant only species that occurred in the county or adjacent counties.

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service.

Haying and/or grazing plans will be developed if used to achieve or maintain the intended purpose.

Additional Criteria to Restore Land Degraded by Human Activity and to Provide Habitat for Rare and Declining Wildlife Species

I. Prairie Establishment

The seeding mixture will consist of a core mix of prairie grasses. In addition, 10 native species including at least a) 1 legume, b) 5 composites, and c) 2 additional plants from the Other Species List will be seeded. Native Plants will be seeded from April 15th – May 31st

Native Prairie Grass List

Select one of the following prairie grass mixes.

Mix 1, Mesic – Dry Prairies, moderately well drained (MWD), well drained (WD), and excessively drained (ED) soils:

Species	lbs./acre of PLS[1]
Big Bluestem (*Andropogon geradii*)	1.0
Indiangrass (*Sorghastrum nutans*)	1.0
Little Bluestem (*Schizachyrium scoparium*)	1.0
Sideoats Grama (*Bouteloua curtipendula*) **or** Canada Wildrye (*Elymus canadensis)*	0.5 1.0
Switchgrass (*Panicum virgatum*)	0.5

Mix 2, Wet Mesic Prairies, somewhat poorly drained (SPD) soils or poorly drained (PD) soils with drainage:

Species	lbs./acre of PLS[1]
Switchgrass (*Panicum virgatum*)	0.5
Virginia Wildrye (*Elymus virginicus*)	2.0
Indiangrass (*Sorghastrum nutans*)	1.5
Big Bluestem (*Andropogon geradii*)	1.5

Mix 3, Wet Prairies, poorly drained (PD) soils with out drainage:

Species	lbs./acre of PLS[1]
Switchgrass (*Panicum virgatum*)	1.0
Big Bluestem (*Andropogon geradii*)	1.0
Virginia Wildrye (*Elymus virginicus*)	2.0
Fowl Mana Grass (*Glyceria striata*)	4 oz./acre
Prairie Cordgrass (*Spartina pectinata*) and/or Canada Blue Joint (*Calamagrostis canadensis*)	50 plants per acre planted in depressions[2].

Composite List

Species	Soil Drainage	oz./acre
Blackeyed Susan (*Rudbeckia hirta*)	MWD-ED	1
Button Blazing Star (*Liatris aspera*)	MWD – ED	2
Dense Blazing Star (*Liatris spicata*)	PD – WD	2
Entire-Leaf Rosinweed (*Silphium integrifolium*)	MWD – ED	4
False Sunflower (*Heliopsis helianthoides*)	MWD – ED	1
Flat Topped Aster (*Aster umbellatus*)	PD – SPD	2
Gray-Headed Coneflower (*Ratibida pinnata*)	MWD – ED	2
New England Aster (*Aster novae-angliae*)	PD – WD	1
Nodding Bur Marigold (*Bidens cernua)*)	PD - SPD	2

[1] PLS - Pure Live Seed

[2] Areas that pond for long or very long duration

Species	Soil Drainage	oz./acre
Prairie Dock (*Silphium terebinthinaceum*)	SPD – ED	4
Riddell's Goldenrod (*Solidago riddelli*)	SPD – ED	1
Sawtooth Sunflower (*Helianthus grosseserratus*)	PD – WD	1
Sneezeweed (*Helenium autumnale*)	PD - SPD	1
Spotted Joe Pye Weed (*Eupatorium maculatum*)	PD - SPD	1
Swamp Aster (*Aster puniceus*)	PD - SPD	1
Tall Coreopsis (*Coreopsis tripteris*)	SPD – ED	3
Wild Quinine (*Parthenium integrifolium*)	MWD – ED	2

Legume List

Species	Soil Drainage	oz./acre
Hoary Tick Trefoil (*Desmodium canescens*)	MWD – ED	3
Lead Plant (small shrub) (*Amorpha canescens*)	WD – ED	1
Partridge Pea (*Cassia fasciculata*)	MWD – ED	4
Roundheaded Lespedeza (*Lespedeza capitata*)	MWD – ED	2
Slender Lespedeza (*Lespedeza virginica*)	MWD – ED	2
White Wild Indigo (*Baptisa leucantha*)	MWD – ED	4
Wild Senna (*Cassia hebecarpa)*	PD – WD	4

Other Species List

Species	Soil Drainage	oz./acre
Butterfly Weed (*Asclepias tuberosa*)	MWD – ED	3
Cardinal Flower (*Lobelia cardinalis*)	PD - SPD	0.5
New Jersey Tea (small shrub less than 3' tall) (*Ceanothus americanus*)	MWD - ED	2
Obedient Plant (*Physostegia virginiana*)	PD - SPD	2
Ohio Spiderwort (*Tradescantia ohiensis*)	SPD – WD	2
Swamp Milkweed (*Asclepias incarnata*)	PD - SPD	3
Virginia Blue Flag (*Iris virginica var. shrevei)*	PD - SPD	4
Virginia Mountain Mint (*Pycnanthemum virginianum*)	SPD – WD	1
Wild Bergamot (*Monarda fistulosa*	SPD – WD	2
Prairie Willow[1] *(Salix humilis*) Shrub seedlings planted on a 6-foot by 6-foot spacing.	PD - SPD	

II. Sedge Meadow Establishment

Sedge meadows are wetlands that can be restored on areas that are dominated by hydric soils (greater than 50%). Before vegetation can be established hydrology must be restored to its natural state. Use Wetland Restoration FOTG Standard 657 to restore hydrology.

Vegetation shall be seeded using 1) the sedge meadow mix, 2) seeding 3 sedge species, and 3) seeding 5 forbs species.

Sedge Meadow Mix

Species	oz./acre
Dark Green Bulrush (*Scirpus atrovirens*)	2
Virginia Wildrye (*Elymus virginicus*)	10
Switchgrass (*Panicum virgatum)*	8
Fowl Mana Grass (*Glyceria striata)*	2

Sedge Species

Species	oz./acre
Bottlebrush Sedge (*Carex lurida)*	3

[1] plant in clumps not greater than ¼ acre in size. Clumps will not exceed 5% of the prairie restoration acres

Crested Sedge (*Carex cristatella)*	2
Fox Sedge (*Carex vulpinoidea*)	4
Frank's Sedge (*Carex frankii)*	4
Meadow Sedge (*Carex granularis*)	3
Tussock Sedge (*Carex stricta)*	1

Forbs

Species	oz./acre
Blue Vervain (*Verbena hastata*)	1
Boneset (*Eupatorium perfoliatum)*	1
Cardinal Flower (*Lobelia cardinalis*)	1
Flat Topped Aster (*Aster umbellatus*)	1
Great Blue Lobelia (*Lobelia siphilitica*)	1
New England Aster (*Aster novae-angliae*)	1
Nodding Bur Marigold (*Bidens cernua*)	2
Obedient Plant (*Physostegia virginiana*)	2
Riddell's Goldenrod (*Solidago riddellii*)	1
Sneezeweed (*Helenium autumnale*)	1
Spotted Joe Pye Weed (*Eupatorium maculatum*)	1
Swamp Aster (*Aster puniceus*)	1
Swamp Milkweed (*Asclepias incarnata*)	3

III. Savanna Establishment

Trees, grasses, and forbs (wildflowers) will be planted to establish the savanna.

A. Tree Planting

Trees shall be established using seedlings or container trees.

Trees will be planted in clumps comprising a minimum of 10% of the site and not to exceed 50% of the site. The smallest clump will be 0.5 acres in size and no clump will exceed 5 acres in size. Trees will be planted using a 30 X 30 foot spacing (approximately 50 trees/acre). A minimum of two trees species will be planted.

Newly planted trees must be protected from fire during establishment. Trees shall be protected from fire for a minimum of 5 years after planting or until they have a minimum diameter of 3 inches at breast height.

Protect young trees from fire using firebreaks, plowed fire line, water fire lines, or other methods.

At least 50% of the trees species will be selected from this list:

Common Name	**Scientific Name**	**Soil Drainage**
Black Oak	*Quercus velutina*	MWD - ED
Bur Oak	*Quercus macrocarpa*	PD - ED
Chinquapin Oak	*Quercus muhlenbergii*	MWD - ED
White Oak	*Quercus alba*	MWD - WD
Swamp White Oak	*Quercus bicolor*	PD - MWD
Pin Oak	*Quercus palustris*	VPD - MWD

Remaining trees to be planted can be selected from this list:

Common Name	**Scientific Name**	**Soil Drainage**
Black Walnut	*Juglans nigra*	MWD - WD
Mockernut Hickory	*Carya tomentosa*	MWD – ED
Persimmon	*Diospyros virginiana*	MWD – WD
Sassafras	*Sassafras albidum*	MWD – ED
Scarlet Oak	*Quercus coccinea*	MWD – ED
Shagbark Hickory	*Carya Ovata*	MWD – WD
Shingle Oak	*Quercus Imbricaria*	SPD – WD

B. Grass Planting

Select one grass species mix as described above under, I. Prairie Establishment.

C. Forb Planting

A minimum of four forb species will be selected from the Composite List, Legume List, or Other Species List described under I. Prairie Establishment.

Additional Criteria to Increase Native Plant Community Diversity and to Manage Unique or Declining Native Habitats

For degraded prairies, sedge meadows, and savannas it is desirable to attempt restoration through management techniques such as prescribed burning, chemical or mechanical control, and interseeding desired species.

- Exotic or invasive woody herbaceous species will be controlled.
- Remove excessive trees from prairies and sedge meadows to provide more sunlight to existing herbaceous plants. Savannas should contain at least 10% of the site as woody vegetation.
- Use Prescribed Burning FOTG Standard (338) to burn one third to one-half of the area every year on a rotating schedule until the desired vegetative community is established.
- If species diversity does not increase (within 3 –5 years) interseed desirable native species into the existing stand.

CONSIDERATIONS

Consider the minimum habitat requirements of target species or other species of concern when determining the size and location of the restored area.

Consider the edge to area ratio for area sensitive target species.

Consider the potential for disturbance by restoration and/or management activities to threatened or endangered species or their habitat.

Seed and plant material should originate from a source within a 200-mile radius of the site.

Consider varying the timing of prescribed burn i.e. late winter v.s. early spring to enhance plant diversity.

Evaluate the site to determine if the habitat can be restored through management techniques, or if it must be established by planting seed and/or tree seedlings.

Consider establishing woody vegetation large enough (3 inches at breast height) to survive prescribed burning before establishment of herbaceous plants for savannas.

Consider working with other agencies and organizations such as the U. S. Fish and Wildlife Service, Indiana Division of Fish and Wildlife, Indiana Division of Forestry, Indiana Division of Nature Preserves, The Nature Conservancy or similar organizations to develop site-specific plans.

Consider soil fertility, structure, drainage, aspect and slope when selecting species. Soil tests and supplemental fertility should be considered, but are not required for this practice.

PLANS AND SPECIFICATIONS

Plans and specifications for restoration and management of declining habitats shall be in keeping with this standard and other applicable federal, state and local codes.

Plans and specifications will include:

- Site map indicating practice type and acreage.
- Necessary management practices.
- Site preparation.
- Species selection and seeding rates.
- Planting dates, care, and handling of seed and plant material.
- A soil map.

OPERATION AND MAINTENANCE

An operation and maintenance plan shall be provided to and reviewed with the landowner. The plan shall include the following items and others as appropriate

Undesirable woody vegetation should be controlled to maintain prairies and sedge meadows. Small woody vegetation may be removed by mowing or using prescribed burning. Larger woody vegetation can be controlled by girdling the stem and/or applying herbicides.

Prairie and savanna communities are best managed by the use of prescribed burning. When prescribed burning is not feasible mowing may be used as a maintenance measure. Care must be taken so that residue does not accumulate and smother the plants.

During the establishment of prairie and savannas, prescribed burning should be conducted every year, if there is enough fuel to carry fire, to stimulate the prairie plants and control weeds. However, newly planted trees must be protected from fire as discussed under savanna establishment. After establishment prescribed burning can be conducted every third year or as needed to best manage the site. Prescribed burning shall take place during the dormant season. When NRCS recommends prescribed burning, a qualified person shall develop a burn plan according to Indiana NRCS policy.

If mowing is used during establishment, mow high enough so the desired vegetation is not disturbed. Mow no more than 1/4 to 1/3 of the field every year. Rotate mowed strips across the field.

If mowing is used during establishment for weed control, mow high enough so the desired vegetation is not disturbed. Warm season grasses shall not be mowed shorter than 10 inches.

Spot mowing, spraying or strip disking may be needed to control weed problems.

To benefit insect food sources for grassland nesting birds, spraying or other control of noxious weeds will be done on a "spot" basis to protect forbs and legumes that benefit native pollinators and other wildlife.

Management measures shall be provided to control invasive species and noxious weeds in order to comply with state noxious weed laws.

REFERENCES

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